USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Title: Institutional Adjustments for Coping with Prolonged and Severe Drought in the Rio Grande Basin

Duration: September 1, 1996 - August 31, 1998

Federal Funds requested: $293,887

Non-Federal (matching) funds pledged: $588,863

Principal investigator(s) name(s) and university

PI: Dr. Frank A. Ward, economist, New Mexico State University

CO PI: Dr. Robert Young, economist (emeritus), Colorado State Univ

CO PI: Dr. Ronald Lacewell, economist, Texas A&M University

CO PI: Dr. J. Philip King, hydrologist, New Mexico State University

CO PI: Dr. John Ellis, economist, Texas A&M University

CO PI: Dr. Marshall Frasier, economist, Colorado State University

CO PI: Dr. Raghavan Srinivasan, hydrologist, Texas A&M University

CO PI: Dr. J. Thomas McGuckin, water economist, New Mexico State Unv

Consultant: Dr. Charles DuMars, water lawyer, University of New Mexico

Consultant: Dr. James Booker, computer modeler, Alfred University, NY

Congressional District of universities where the research is to be conducted: New Mexico State University, Las Cruces, NM (NM District

Texas A&M University, College Station, TX, (TX District

Colorado State University, Ft. Collins, CO (CO District

Statement of critical regional or State water problems.

To overcome seasonal and multi-year water shortages and meet projected future demands in the Rio Grande Basin, federal and state governments have built *an* extensive network of water storage and conveyance systems. The economies of the southwestern United States and northeast Mexico have been built by establishing a reliable water supply in a largely arid land, and many institutions in the area have become important by supporting water resources development. In the United States the water laws of the three states in the Rio Grande Basin region have evolved to protect past investments in water development and define the management rules for water usage. Regional water management systems have developed and linked the water resources of the Rio Grande to serve users in Colorado, New Mexico, and Texas.

The physical systems serving the area have a large but finite capacity for coping with drought. The laws and institutions are not prepared for acute and prolonged droughts. To date there has been no comprehensive analysis conducted for providing information needed to get through such a drought with minimal economic disturbance. Increasing population and growing demands placed on land and water resources are increasing potential drought severity, magnifying the probable economic losses during a prolonged series of dry years. These forces are increasing the potential benefits that would result from a comprehensive analysis of drought.

Statement of results or benefits.

This project will characterize probable drought scenarios and the capability of existing infrastructural and institutional systems to respond to drought. The information gleaned from the project will help managers who are responsible for planning in their drought contingency planning, and help other researchers focus on the issues in water management during drought.

The methodoIogies employed by the study will be of interest to water managers and researchers addressing water allocation and management in other arid regions. Altemative drought planning strategies developed by this project will outline important management options for increasing coping capacities. Additionally, the project will identify important information that can be used by managers to best deal with drought.